

## RESEARCH OUTPUTS / RÉSULTATS DE RECHERCHE

### **Definition and validation of a business IT alignment method for enterprise governance improvement in the context of processes based organizations - presentation**

Feltus, Christophe

*Publication date:*  
2008

*Document Version*  
Peer reviewed version

[Link to publication](#)

*Citation for pulished version (HARVARD):*

Feltus, C 2008, *Definition and validation of a business IT alignment method for enterprise governance improvement in the context of processes based organizations - presentation..*

#### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

#### **Take down policy**

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

## **Definition and validation of a business IT alignment method for enterprise governance improvement in the context of processes based organizations**

*Christophe Feltus, Centre de Recherche Public Henri Tudor – LUXEMBOURG  
Michaël Petit, Computer Science Department FUNDP – BELGIUM  
Georges Ataya, Solvay Business School ULB – BELGIUM*

## AC Models ...

AC MODEL AND RESPONSIBILITY'S CONCEPTS

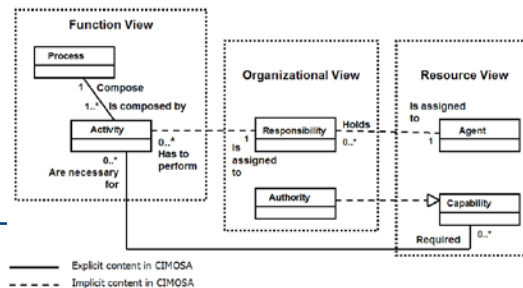
	MAC	DAC	RBAC	UCON
Subject	Yes	Yes	Yes	Yes
Object	Yes	Yes	Yes	Yes
Group	No	User Group	Role	Defined by objects and subject's attributes
Capability	Access Right	Access Right	Access Right	Access Right
Accountability (Obligation, Constraint)	No	No	Yes, static and dynamic separation of duty	Defined by objects and subject's attributes
Commitment	No	No	No	No

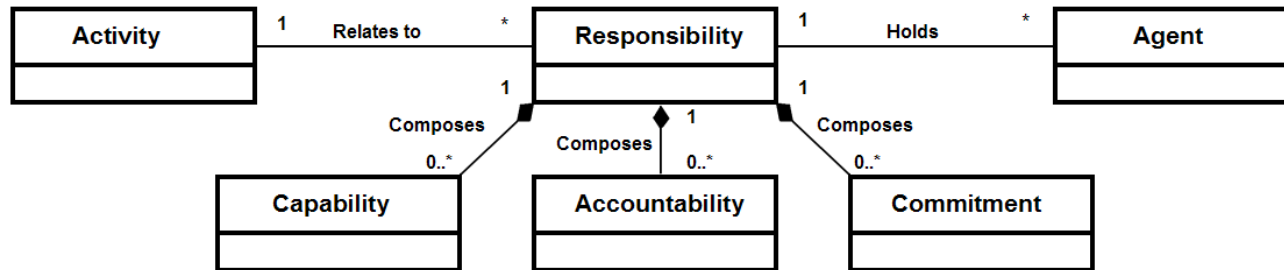
## RE Models ...

ENGINEERING METHODS AND RESPONSIBILITY'S CONCEPTS.

	KAOS	I*	GBRAM	ARMF	RACAF	Scenario Driven	Uses Cases
Subject	Agent	Actors	Agent	Users	Actors	Subject	Actors
Object	Yes	Yes	-	Asset	Data	-	Object
Group	-	Yes	-	Yes	Yes	Yes	Yes
Capability (Right, Authorization)	Authorization rules	Abilities and beliefs	-	Permission	Permission	Permission	Access right
Accountability (Obligation, Constraint)	Achieve requirements and expectations	Goal	Achieve a goal	Perform a task	Perform a task	Perform a scenario	Pre-conditions, post-conditions
Commitment	No	Yes	No	No	No	No	No

## EAM Models ...

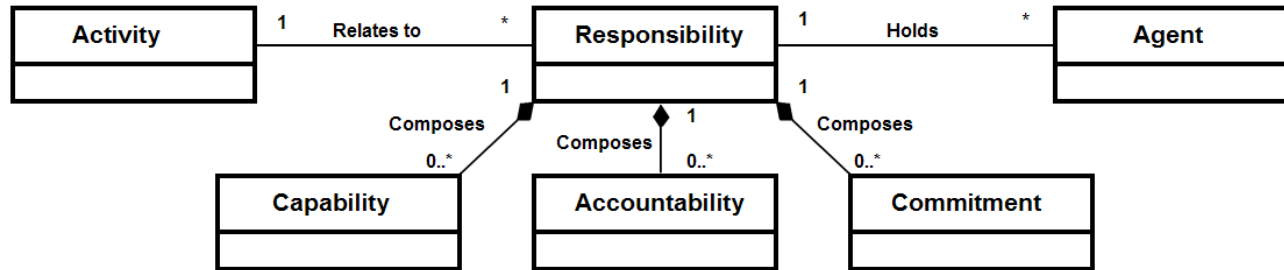




**Accountability** : which describes the state of being answerable about the achievement of an activity.

**Commitment** : is the moral engagement of an agent to fulfill an activity and the assurance that he will do it in respect of an ethical code.

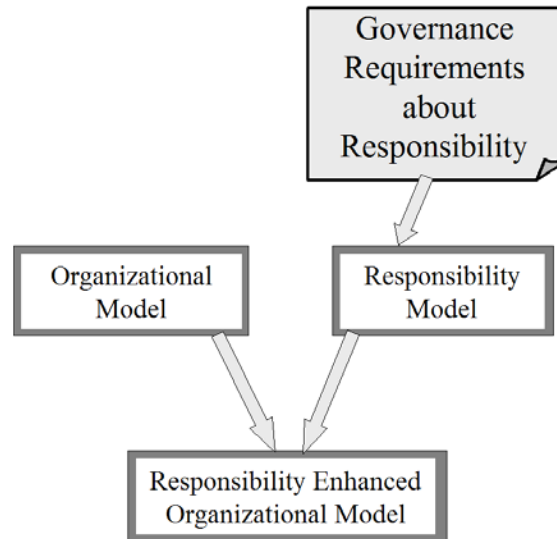
**Capability** : which describes the require qualities skills or resources to perform an activity.



## Advantages

- Responsibility are clearly established and understood
- Accountability is linked to an agent rather to a group of agent (like role)
- It increases the ethic of the business
- It guarantees the right capability of the right agent. Not more, not less.

# The model...



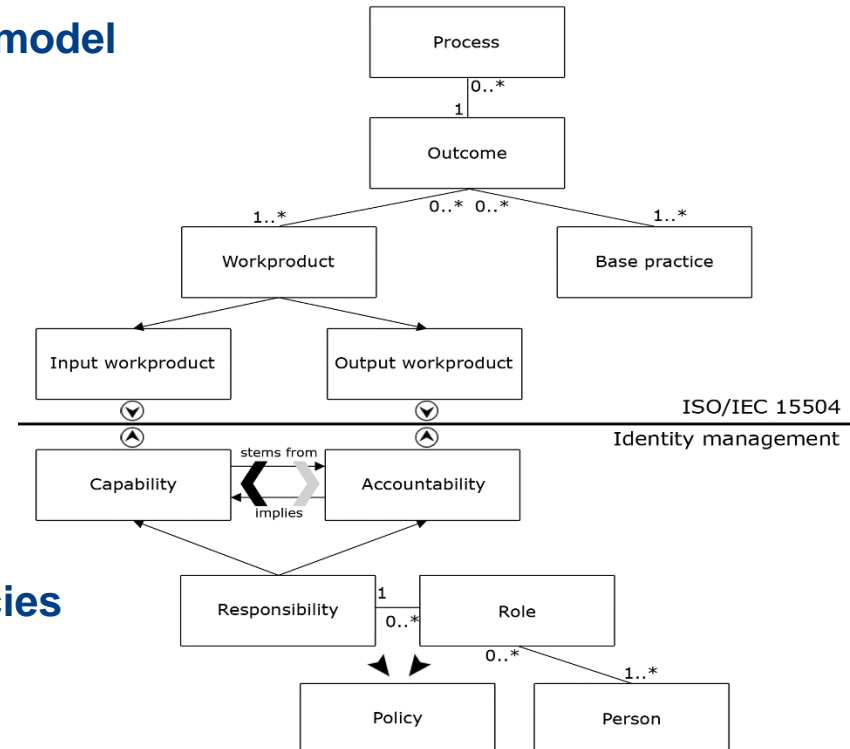
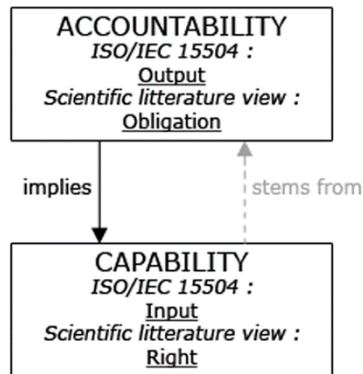
**Policy elicitation** : The model advantage is a strong framework for policy elicitation.  
The model may address all level of the organisation  
The policies may be technical as well as managerial

**Enhancement of models** : Lot of models do not deeply address the responsibility.  
We join those models with the responsibility model  
The models are closer to governance requirements

**Standard enforcement in practices** :  
The model provide material to enhance the practice

- ISO/IEC 15504 provides a processes structure and a maturity model
- Responsibility is not centric in the standard. It is addressed in Level 2 of the MM
- Basically, the standard may not be used to define policies

→ We make links between the standard and our model



- Based on that link, it is possible to define policies aligned to business requirements

## MAIN CONCEPTS OF THE PROJECT MANAGEMENT PROCESS

### ISO/IEC 15504-5:2006 → MAN.3 Project management

<b>Purpose</b>	The purpose of the Project management process is to identify, establish, co-ordinate, and monitor the activities, tasks and resources necessary for a project to produce a product and/or service, in the context of the project's requirements and constraints.
<b>Outcomes</b>	3) the tasks and resources necessary to complete the work are sized and estimated;
<b>Base Practices</b>	MAN.3.BP4: Determine and maintain estimates for project attributes. Define and maintain baselines for project attributes. [Outcome: 2,3] MAN.3.BP5: Define project activities and tasks. Identify project activities and tasks according to defined project life cycle, and define dependencies between them. [Outcome: 3]
<b>Workproducts inputs</b>	03-06 Process performance data [Outcome: 3,7] 08-12 Project plan [Outcome: 3, 6, 7] 10-01 Life cycle model [Outcome: 1, 3, 4, 5] 14-06 Schedule [Outcome: 1, 3]
<b>Workproducts output</b>	08-12 Project plan [Outcome: 1, 2, 3, 4, 5] 14-06 Schedule [Outcome: 5]

```

<Target>
<Subjects>
<SubjectMatch MatchId="urn:oasis:names:tc:xacml:1.0:function:string-equal">
  <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">
    42
  </AttributeValue>
  <SubjectAttributeDesignator AttributeId="contact_id"
    DataType="http://www.w3.org/2001/XMLSchema#string"
    MustBePresent="true"/>
</SubjectMatch>
</Subjects>

<Actions>
<Action>
  <ActionMatch MatchId="urn:oasis:names:tc:xacml:1.0:function:string-equal">
    <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">
      read
    </AttributeValue>
    <ActionAttributeDesignator AttributeId="http://www.w3.org/2001/XMLSchema#string"
      AttributeId="urn:oasis:names:tc:xacml:1.0:action:action-id"/>
  </ActionMatch>
</Action>
</Actions>

<Resources>
<ResourceMatch MatchId="urn:oasis:names:tc:xacml:1.0:function:string-equal">
  <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">
    14-06 Schedule
  </AttributeValue>
  <ResourceAttributeDesignator
    AttributeId="urn:oasis:names:tc:xacml:1.0:resource:resource-id"
    DataType="http://www.w3.org/2001/XMLSchema#string"/>
</ResourceMatch>
</Resources>
</Target>

```

## ISO/IEC 15504-5:2006: MAN.3 Project management

The purpose of the Project management process is to identify, establish, co-ordinate, and monitor the activities, tasks, and resources necessary for a project to produce a product and/or service, in the context of the project's requirements and constraints.

### Outcomes :

- 1) the scope of the work for the project is defined;
- 2) the feasibility of achieving the goals of the project with available resources and constraints are evaluated;
- 3) the tasks and resources necessary to complete the work are sized and estimated;
- 4) interfaces between elements in the project, and with other project and organizational units, are identified and monitored;
- 5) plans for the execution of the project are developed and implemented;
- 6) progress of the project is monitored and reported;
- 7) actions to correct deviations from the plan and to prevent recurrence of problems identified in the project are taken when project targets are not achieved.

### Base practices :

Expand all | Collapse all

MAN.3.BP1: Define the scope of work. Identify the project's objectives, motivation and boundaries and define the work to be undertaken by the project. [Outcome: 1]

MAN.3.BP2: Define project life cycle. Define a life cycle and strategy for the project, appropriate to its scope, context, magnitude and complexity. [Outcome: 1]

MAN.3.BP3 Evaluate feasibility of the project. Evaluate the feasibility of achieving the goals of the project with available resources and constraints. [Outcome: 2]

MAN.3.BP4: Determine and maintain estimates for project attributes. Define and maintain baselines for project attributes. [Outcome: 2, 3]

Outcome 3 Responsible

Accountability

Complete 08-12 Project plan

Capability

Access to 03-06 Process performance data in Read mode

Access to 08-12 Project plan in Read/Write mode

Access to 10-01 Life cycle model in Read mode

Access to 14-06 Schedule in Read mode

MAN.3.BP5: Define project activities and tasks. Identify project activities and tasks according to defined project life cycle, and define dependencies between them. [Outcome: 3]

Outcome 3 Responsible

Accountability

Complete 08-12 Project plan

Capability

Access to 03-06 Process performance data in Read mode

Access to 08-12 Project plan in Read/Write mode

Access to 10-01 Life cycle model in Read mode

Access to 14-06 Schedule in Read mode

MAN.3.BP6: Define needs for experience, knowledge and skills. Identify the experience, knowledge and skill requirements of the project and apply them to the selection of individuals and teams. [Outcome: 3]

MAN.3.BP7: Define project schedule. Identify the project's objectives, motivation and boundaries and define the work to be undertaken by the project. [Outcome: 2]

MAN.3.BP8: Identify and monitor project interfaces. Identify and agree interfaces of the project with other projects, organizational units and other affected parties and monitor agreed commitments. [Outcome: 4]

MAN.3.BP9: Allocate responsibilities. Identify the specific individuals and groups contributing to, and impacted by, the project, allocate them their specific responsibilities, and ensure that the commitments are understood and accepted, funded and achievable. [Outcome: 5, 6]

MAN.3.BP10: Establish project plan. Define and maintain project master plan and other relevant plans to cover the project scope and goals, resources, interfaces, interfaces and communication mechanisms. [Outcome: 5]

MAN.3.BP11: Implement the project plan. Implement planned activities of the project, record status of progress and report the current status to affected parties. [Outcome: 5, 6]

MAN.3.BP12: Monitor project attributes. Monitor project scope, budget, cost, resources and other necessary attributes and document significant deviations of them against the project baseline. [Outcome: 6]

MAN.3.BP13: Review progress of the project. Regularly report and review the status of the project performance against the project plan. [Outcome: 6]

MAN.3.BP14: Act to correct deviations. Take action when project goals are not achieved, to correct deviations from the plan and to prevent recurrence of problems identified in the project. Update project plans accordingly. [Outcome: 7]

MAN.3.BP15: Perform project close-out review. Perform a review of the performance of the project in order to provide an experience record for establishing the feasibility of future projects and updating historical estimating data. [Outcome: 2, 3]

### Workproducts :

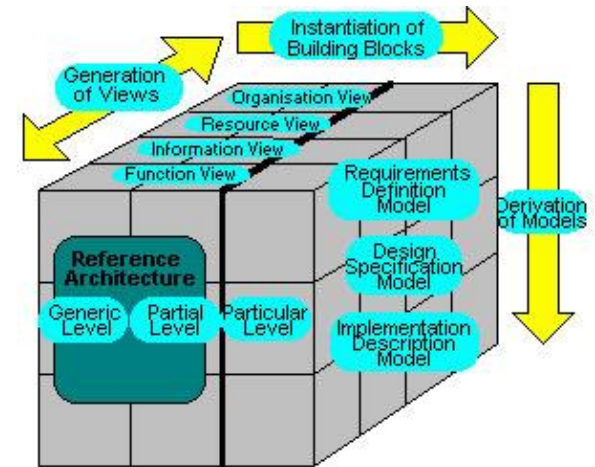
Inputs	Outputs
02-00 Contract [Outcome: 1, 2]	
03-06 Process performance data [Outcome: 3, 7]	
07-05 Project measure [Outcome: 6]	
08-06 Project activity network [Outcome: 5]	08-06 Project activity network [Outcome: 4]
08-08 Human resource management plan [Outcome: 2]	
08-12 Project plan [Outcome: 3, 6, 7]	08-12 Project plan [Outcome: 1, 2, 3, 4, 5]
08-19 Risk management plan [Outcome: 6, 7]	08-19 Risk management plan [Outcome: 5]
10-01 Life cycle model [Outcome: 1, 3, 4, 5]	
12-01 Request for proposal [Outcome: 1]	13-04 Communication record [Outcome: 4]
13-07 Problem record [Outcome: 7]	
13-14 Progress status record [Outcome: 7]	13-14 Progress status record [Outcome: 6]
13-16 Change request [Outcome: 1]	13-16 Change request [Outcome: 7]
13-17 Customer request [Outcome: 1]	
	13-19 Review record [Outcome: 7]
	14-02 Corrective action register [Outcome: 7]
14-06 Schedule [Outcome: 1, 3]	14-06 Schedule [Outcome: 5]
14-08 Tracking system [Outcome: 4, 6]	
14-09 Work breakdown structure [Outcome: 5]	14-09 Work breakdown structure [Outcome: 4]
17-03 Customer requirements [Outcome: 2]	15-06 Project status report [Outcomes: 4, 5]
19-07 Software development methodology [Outcome: 5]	



CIMOSA is a modelling framework that provides semantic unification of the concepts from a system architecture.

It contains three axes (CIMOSA Cube) :

- **GENERATION** (with 4 views : Function, Information, Resources and Organization)
- **INSTANTATION**
- **DERIVATION**



**Agent = functional entity**

→ represented in resource view

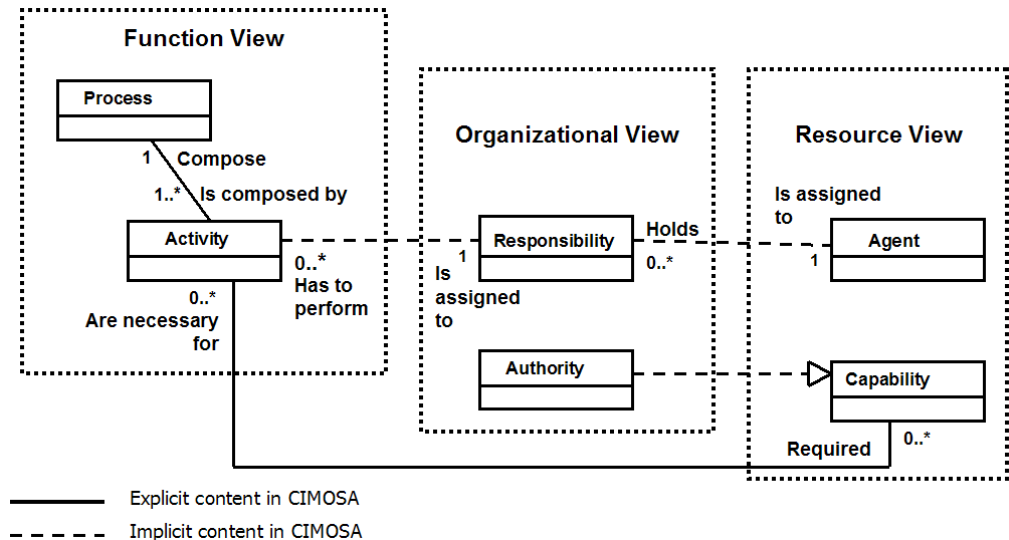
**Responsibility**

→ represented in organization view

**Capability**

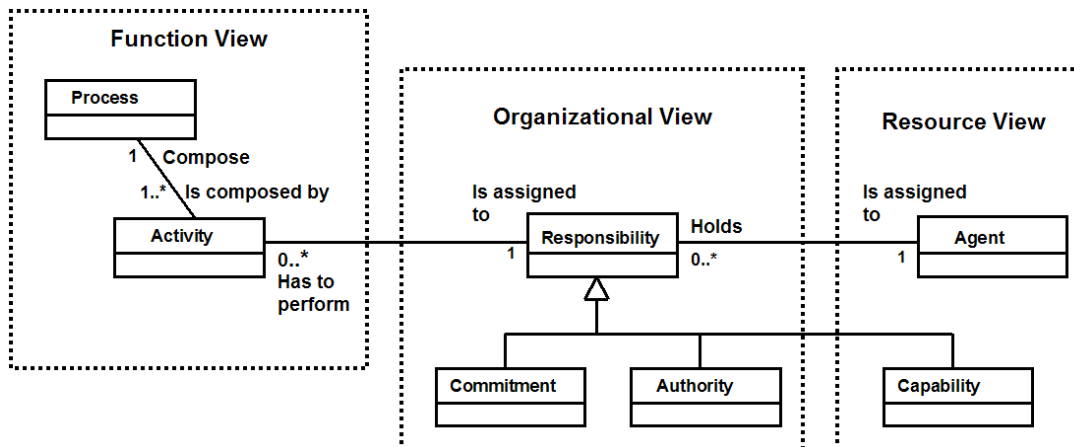
→ represented in resource view

**No commitment, no link between accountability and responsibility**



## Enhancement :

- Responsibility explicitly introduced in organization view
- Responsibility is linked to an activity and to an agent
- Capability no more linked to the activity but is linked to the responsibility
- Commitment is introduced
- Accountability is formally a component of the responsibility



ResourceInput: *Name of resource*  
Responsibility:  
    Accountable : *list of accountabilities*  
    Capability : *list of capabilities*  
    Commitment : *list of commitments*

## The principle :

### **2.1.1 Principle 1: Responsibility**

Individuals and groups within the organization understand and accept their responsibilities in respect of both supply of, and demand for IT. Those with responsibility for actions also have the authority to perform those actions.

## ISO/IEC 38500:2008 requirement (from Principle 2 : Strategy) :

---

### **Direct**

---

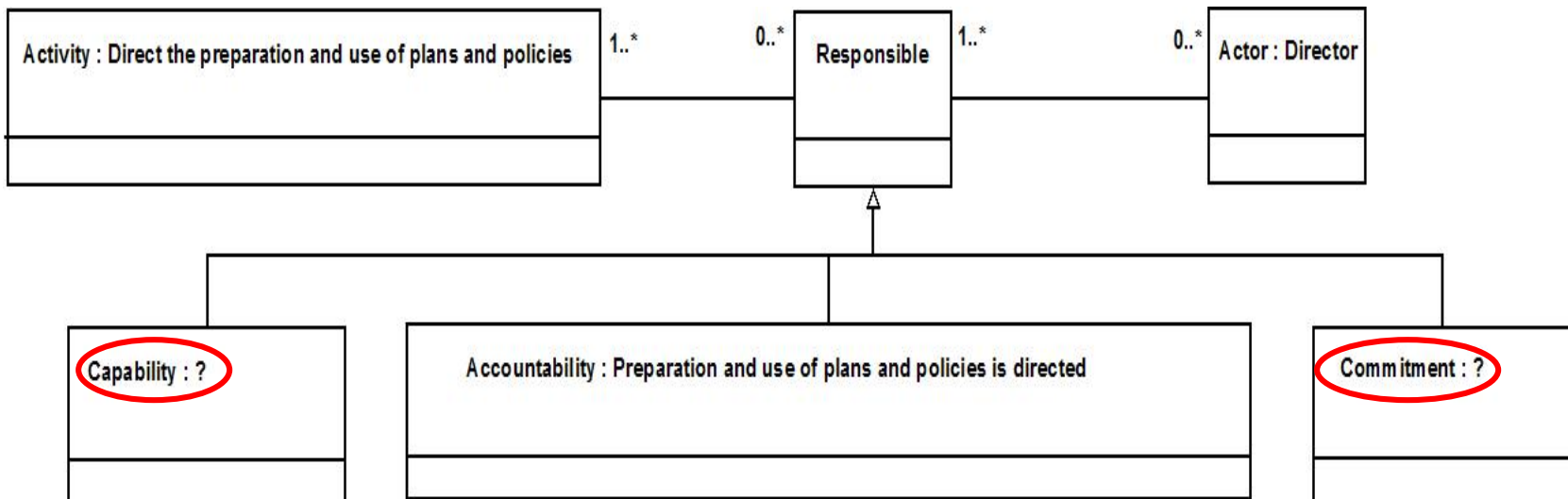
Directors should direct the preparation and use of plans and policies that ensure the organization does benefit from developments in IT.

- **Agent : Director**
- **Activity : Direct the preparation and use of plans and policies**
- **Accountability : Plans and policies**

**The standard provides principles and not guideline**  
**Is it improvable regarding the definition of responsibility ?**

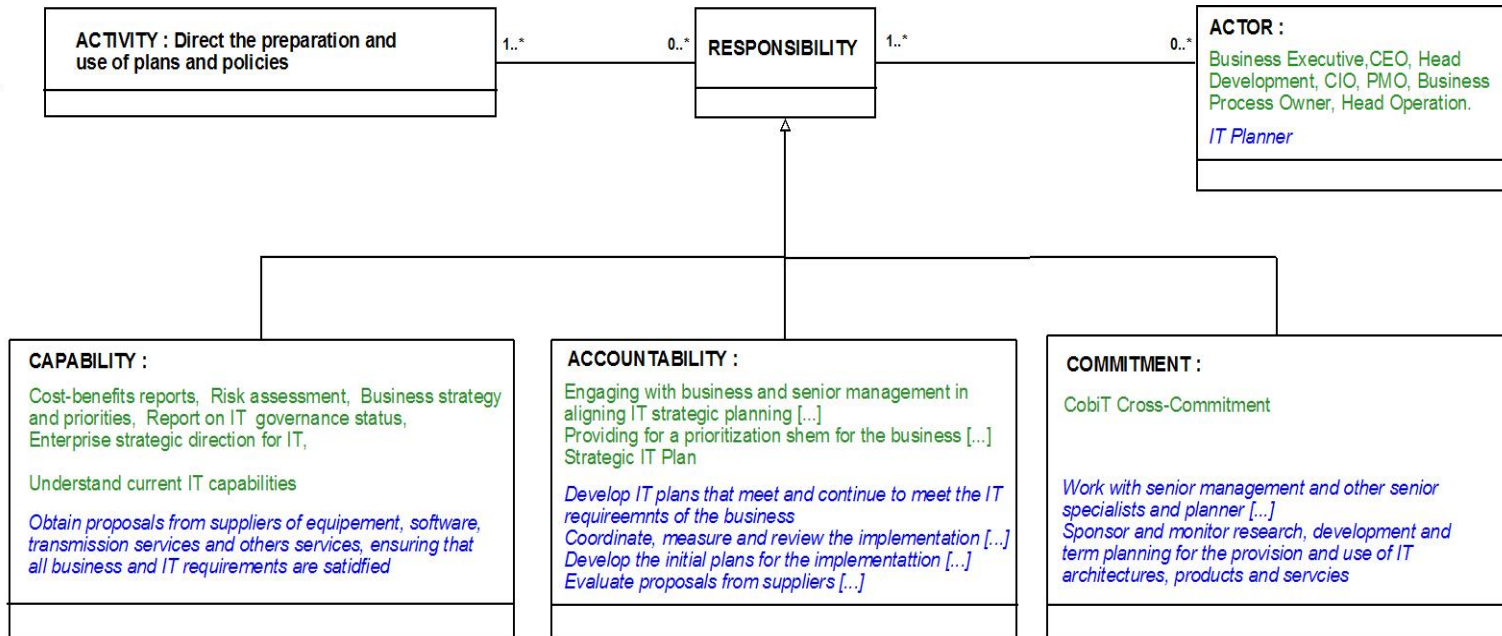
## ISO/IEC 38500:2008

Director should direct the preparation and use of plans and policies that ensure the organization does benefit from the developments of IT



## ISO/IEC 38500:2008

### From principle to guide lines :



### Information from :

**CobiT : PO1 Plan and Organise : Define a Strategic IT Plan**

**ITIL : IT Planner role's objectives**

## ISO/IEC 38500:2008

→ 6 principles :

Principle 1 : Responsibility clearly defined and assigned

**Responsibility may be model using Capability, Accountability and Commitment**

**1<sup>st</sup> illustration :**

**Creation of policies (business to IT) from business goals / processes and mapping with the standard ISO/IEC 15504**

**2<sup>nd</sup> illustration :**

**Enhancement of existing models; enhancement of CIMOSA to improve responsibility definition and assignation through enterprise architectures**

**3<sup>rd</sup> illustration :**

**Enhancement of the responsibility definition in governance principle and contribution to the translation of principles in guide-lines.**

***Thank you for your attention,  
Question ?***



- 7 Abou El Kalam, A., El Baida, R., Balbiani, P., Benferhat, S., Cuppens, F., Deswarte, Y., Miège, A., Saurel, C., Trouessin, G. (2003), Organization-Based Access Control, IEEE 4th International Workshop on Policies for Distributed Systems and Networks (Policy'03), 4-6 juin 2003, Côme, Italie, pp 120-131.
- 7 Antón, A. (1996), *Goal-Based Requirements Analysis*. Second ICRE'96, Colorado Springs, USA.
- 7 Aubert, J., Gateau, B., Incoul, C., Feltus, C. (2008), *SIM : An Innovative Business-Oriented Approach for a Distributed Access Management*, International Conference on Information & Communication Technologies: from Theory to Applications (IEEE ICTTA2008), Damascus, Syria.
- 7 Basel II (2006), Bank for International Settlements BIS: International Convergence of Capital Measurement and Capital Standards: Revised Framework – Comprehensive Version.
- 7 Bertino, E., Mileo, A., and Provetti, A. 2005. *PDL with Preferences*. IEEE international Workshop on Policies For Distributed Systems and Networks, Policy 2005 – Vol. 00, IEEE Computer Society, Washington, DC, 213-222.
- 7 CEN/ENV 12204 (1996): Advanced manufacturing technology – Systems architecture - Constructs for enterprise modelling, CEN TC 310/WG1.
- 7 CobiT 4.1, *Control Objectives for Information and Related Technology*, Information Systems Audit and Control Association, <http://www.isaca.org/Template.cfm?Section=COBIT6&Template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=55&ContentID=7981>
- 7 Crook, R., Ince, D., Nuseibeh, B., (2002) *Towards an Analytical Role Modelling Framework for Security Requirements*, Security Requirements Group, Departement of Computing, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK.
- 7 Directive 95/46/EC (1995), European Union: Directive 95/46/EC of the European Parliament and of the Council. Official Journal of the European Communities, pp. 28-31.
- 7 Feltus, C. and Rifaut, A. (2007), *An Ontology for Requirements Analysis of Managers' Policies in Financial Institutions*, I-ESA2007, Madeira, Portugal.
- 7 Feltus, C. (2008), *Preliminary Literature Review of Policy Engineering Methods - Toward Responsibility Concept*, ICTTA2008, Damascus, Syria.
- 7 Ferraioli, D. F., Sandhu, R., Gavrila, S., D. Kuhn, R., Chandramouli, R. (2001), Proposed NIST Standard for Role-Based Access Control, *ACM Transactions on Information and System Security*, 4 (3), 224-274.
- 7 Gateau, B., Feltus, C., Aubert J., Incoul, C. (2008), *An Agent-based Framework for Identity Management: The Unsuspected Relation with ISO/IEC 15504*, RCIS 2008, Morocco.
- 7 ISO/IEC 38500 (2008), International Standard for Corporate Governance of IT (IT Governance)
- 7 ISO 9000:2005 (2005), Quality management systems - Fundamentals and vocabulary.
- 7 ISO/IEC 15504-1 (2004): Information technology - Process assessment - Part 1: Concepts and vocabulary.
- 7 ISO/IEC 15504-2 (2003): Information technology - Process assessment - Part 2: Performing an assessment.
- 7 ISO/IEC 15504-5 (2006): Information technology - Software Process Assessment - Part 5: An exemplar process assessment model.
- 7 ITIL (2001), *IT Infrastructure Library – Service Delivery*, The Stationery Office Edition, ISBN 011 3308930.
- 7 Kosanke, K., Vernadat, F.B. and Zelm, M. (1999) *CIMOSA: enterprise engineering and integration Computers in Industry*, Volume 40, Issues 2-3, Pages 83-97.
- 7 March, J. G. and Olsen, J. P. (1995) *Democratic Governance*, New York, The Free Press, 1995, 292 pp.
- 7 Mauchan, M. (2007), thèse « *Modélisation pour la simulation de chaines de production de valeur en entreprise industrielle comme outil d'aide à la décision en phase de conception / Industrialisation* »
- 7 Park, J., Sandhu, R., (2002) Originator Control in Usage Control, *Policy 2002*, Monterey, California, U.S.A.
- 7 Rifaut, A. and Feltus, C. (2006), *Improving Operational Risk Management Systems by Formalizing the Basel II Regulation with Goal Models and the ISO/IEC 15504 Approach*, REMO2V'2006, Luxembourg
- 7 Sarbanes, P. S. and Oxley, M. (2002) "Sarbanes-Oxley Act of 2002".
- 7 Savén, R. S. (2002), *Process modelling for enterprise integration: review and framework*, 13th International Working Seminar on Production Economics, Igls/Innsbruck, Austria, February 18-22.
- 7 Togaf (2007), *The Open Group Architecture Framework (TOGAF 8.1.1 'The Book')*, 2007 Edition , Van Haren Publishing
- 7 Vernadat F. B. (1995), *Enterprise Modelling and Integration*, Chapman & Hall, London , ISBN 0-412-60550-3
- 7 Vernadat, F.B. (2004), *Enterprise Modelling: Objectives, constructs & ontologies*, Tutorail EMOI-CaiSE Workshop, Latvia.
- 7 Yu, E. S. and Liu, L. (2001). *Modelling Trust for System Design Using the i\* Strategic Actors Framework*. Workshop on Deception, Fraud, and Trust in Agent Societies Held During the Autonomous, Eds. Lecture Notes In Computer Science, vol. 2246. Springer-Verlag, London, 175-194